revista docência do ensino superior

VOLUME 16
2026
ISSN: 2237-5864

Atribuição CC BY 4.0 Internacional
Acesso Livre

DOI: https://doi.org/10.35699/2237-5864.2026.62235

SEÇÃO: ARTIGOS

Food sustainability in nutrition education at Brazilian federal universities[1, 2]

Sostenibilidad alimentaria en la formación de nutricionistas en universidades federales brasileñas

Sustentabilidade alimentar na formação de nutricionistas em universidades federais brasileiras

Lidiane Lieseski[3], Gabriele Gomes da Silva[4], Rozane Marcia Triches[5]

ABSTRACT

Including sustainability as a theme in undergraduate Nutrition courses is essential to train professionals capable of promoting food practices that reconcile human health, social justice, and environmental concerns. The purpose of this article is to analyze how Nutrition programs at

[1] Translated into English by Ohana Leticia Silva Delilo, at the authors' request.
[2] Este artigo é fruto de pesquisa de mestrado intitulada "A centralidade da alimentação no desenvolvimento sustentável: como estamos formando nutricionistas diante deste desafio?". Disponível em: https://rd.uffs.edu.br/handle/prefix/8559.

[3] Universidade Federal da Fronteira Sul, Campus Laranjeiras do Sul, PR, Brasil.
ORCID ID: https://orcid.org/0000-0003-0472-8093. E-mail: lidianelieseski@gmail.com
[4] Universidade Federal da Fronteira Sul, Campus Realeza, PR, Brasil.
ORCID ID: https://orcid.org/0009-0004-9140-3186. E-mail: gabrielegomesdasilva7@gmail.com
[5] Universidade Federal da Fronteira Sul, Campus Realeza, PR, Brasil.
ORCID ID: https://orcid.org/0000-0002-4460-4821. E-mail: rozane.triches@uffs.edu.br

Recebido em: 02/12/2025 *Aprovado em: 16/04/2026* *Publicado em: 17/08/2026*

federal universities have been addressing the topic of sustainability from the perspective of coordinators and the design of Course Pedagogical Projects (CPPs). To this end, we investigated the mention of sustainability, the mandatory and optional curricular components that address the topic, their approaches and articulations; the graduate profile; the guiding frameworks adopted; as well as the role of research, outreach, and teacher training in this process. This mixed-methods research analyzed 42 course plans and five interviews with course coordinators using content analysis. Regarding CPPs, 35.71% do not yet address sustainability, but 64.3% offer at least one course (mandatory or optional) and reference the topic in their guiding principles. 26.19% explicitly cite sustainable development as a desirable competency for graduates. It was also observed that research and outreach foster this student development, but that a gap may still exist in faculty training. Overall, although there has been progress in incorporating sustainability into Nutrition CPPs, it is not yet a structuring axis of the training. The topic's fragmented presence suggests the need for greater coordination between teaching, research, and outreach, as well as faculty training so that the concept is addressed critically, interdisciplinary, and cross-disciplinary.

Keywords: sustainable development; food system; degree in nutrition; curriculum guidelines.

RESUMEN

Incluir la sostenibilidad como tema central en los cursos de Nutrición de pregrado es fundamental para formar profesionales capaces de promover prácticas alimentarias que concilien la salud humana, la justicia social y las preocupaciones medioambientales. El propósito de este artículo es analizar cómo los programas de Nutrición en universidades federales han abordado el tema de la sostenibilidad desde la perspectiva de los coordinadores y el diseño de los Proyectos Pedagógicos de Curso (PPCs). Para ello, investigamos la mención de la sostenibilidad, los componentes curriculares obligatorios y opcionales que abordan el tema, sus enfoques y articulaciones; el perfil de egreso; los marcos rectores adoptados; así como el papel de la investigación, la extensión y la formación docente en este proceso. Esta investigación de métodos mixtos analizó 42 planes de estudio y cinco entrevistas con coordinadores de cursos mediante análisis de contenido. Con respecto a los PPCs, el 35,71% aún no aborda la sostenibilidad, pero el 64,3% ofrece al menos un curso (obligatorio u opcional) y hace referencia al tema en sus principios rectores. El 26,19% cita explícitamente el desarrollo sostenible como una competencia deseable para los graduados. También se observó que la investigación y la extensión fomentan este desarrollo estudiantil, pero que aún existe una brecha en la formación del profesorado. En general, si bien se ha avanzado en la incorporación de la sostenibilidad en los PPCs de Nutrición, aún no constituye un eje estructurante de la formación. La fragmentación del tema sugiere la

necesidad de una mayor coordinación entre docencia, investigación y extensión, así como con la formación del profesorado, para que el concepto se aborde de forma crítica, interdisciplinaria y transdisciplinaria.

Palabras clave: desarrollo sostenible; sistema alimentario; formación en nutrición; directrices curriculares.

RESUMO

A inserção da temática sustentabilidade nos cursos de graduação em Nutrição é imprescindível para formar profissionais capazes de promover práticas alimentares que conciliem saúde humana, justiça social e preocupações ambientais. O propósito deste artigo é analisar como os cursos de Nutrição das universidades federais vêm abordando a temática da sustentabilidade sob a perspectiva dos coordenadores e da configuração dos Projetos Pedagógicos de Curso (PPCs). Para isso, foram investigados a menção sobre sustentabilidade, os componentes curriculares obrigatórios e optativos que tratam do tema, suas abordagens e articulações; o perfil do egresso; os referenciais norteadores adotados; bem como o papel da pesquisa, extensão e da formação docente nesse processo. Esta pesquisa, de abordagem mista, analisou 42 PPCs e cinco entrevistas com coordenadoras de cursos a partir de análise de conteúdo. Relativos aos PPCs, 35,71% deles ainda não apresentam qualquer abordagem sobre sustentabilidade, mas 64,3% ofertam pelo menos uma disciplina (obrigatória ou optativa) e fazem referência nos princípios norteadores sobre o tema. Ainda, 26,19% citam expressamente o desenvolvimento sustentável como competência desejável dos egressos. Observou-se também que a pesquisa e extensão propiciam esta formação discente, mas que uma lacuna ainda pode estar na formação dos docentes. De modo geral, embora haja avanços na inserção da sustentabilidade nos PPCs de Nutrição, ela ainda não se configura como eixo estruturante da formação. A presença fragmentada do tema sugere a necessidade de maior articulação entre ensino, pesquisa e extensão, bem como da capacitação docente para que o conceito seja trabalhado de forma crítica, interdisciplinar e transversal.

Palavras-chave: desenvolvimento sustentável; sistema alimentar; formação em nutrição; diretrizes curriculares.

INTRODUCTION

The growing concern about the impacts of food systems on human health and the environment has gained prominence in global agendas that intersect food and sustainability, as pointed out by Jacob et al. (2018). In this context, reconciling the nutrition of growing populations with the preservation of functional ecosystems emerges as the central challenge of 21st-century food

policies. It is imperative to solve this food equation, given the need to increase/democratize production/distribution in line with population and income growth, while ensuring that the food system is healthy, sustainable, and fair for present and future generations (Marchioni et al., 2021).

To address this challenge, academia, with its role in training key players in this struggle, has been called upon to reinvent itself. How has it been training professionals to work in this context of environmental and climate change? In this regard, the question addressed by this study arises: How are Nutrition programs at federal universities preparing nutritionists to address this transition toward sustainable food systems?

Many of the environmental and health problems stem from the hegemonic food system, characterized by monocultures, inappropriate land use, pesticides, and intensive animal farming, which result in high greenhouse gas emissions. Thus, this model reduces the consumption of fresh and varied foods, while increasing the consumption of ultra-processed foods rich in sodium, fats and sugars, which aggravates obesity, chronic non-communicable diseases, malnutrition and hunger (FAO, 2010; Machado et al., 2021). The 17 Sustainable Development Goals adopted by the UN General Assembly within the 2030 Agenda reinforces this urgency by aiming to eradicate poverty, hunger and malnutrition, promote prosperity and protect the planet, requiring professionals in Nutrition to be aligned with these goals (UN, 2015).

With regard to these agendas and concerns a discussion on sustainable diets arises relating directly to the science of Nutrition. In 2010, the Food and Agriculture Organization of the United Nations (FAO) coined the concept of sustainable diets as those with low environmental impact, which contribute to Food and Nutrition Security (FNS), promote healthy living in the present and the future, respect biodiversity and ecosystems, and are culturally acceptable, economically fair and affordable, nutritionally adequate, safe and healthy while optimize natural and human resources (FAO, 2010; Freitas & Garcia, 2018).

Given this scenario, nutrition professionals are and will increasingly be one of the key players involved in the revision of food systems, so that such systems are shaped with the aim of promoting health and sustainability (Fanzo et al., 2015). However, discussions about the science of Nutrition (Lang et al. (2009) call into question how prepared these professionals are for this, since, first of all, it is necessary to rethink the foundations of this science, its epistemological assumptions and its approaches. Lang et al. (2009) developed a typology related to the science of Nutrition, arguing that there is not one Nutrition, but rather Nutritions.

According to them at least three stand out: Life Sciences Nutrition (more closely related to the natural sciences, or what we could describe as a branch linked to Clinical Nutrition); Social Nutrition (more closely related to the humanities and social sciences); and Eco-Nutrition (which encompasses environmental foundations and implications).

Thus, it is necessary to rethink primarily the science of the field, and then consequently the training of professionals in order to apply their knowledge, skills and attitudes in policies, research and service provision addressing food sustainability (Fanzo *et al.*, 2015). In addition, the new Brazilian National Curriculum Guidelines (DCNs, from the Portuguese Diretrizes Curriculares Nacionais) for the Nutrition program were approved by Resolution No. 2 of August 15, 2025 (Brazil, 2025). These guidelines stipulate that nutritionists' training should incorporate sustainability as a structuring and cross-cutting element, recognizing healthy and sustainable food systems as pillars of adequate nutrition and the human right to health, directly aligning with the UN 2030 Agenda (UN, 2015).

It is important to consider the authors' paradigms for this analysis on the context of education in Nutrition, which consists in viewing sustainability as a broad cross-cutting axis, while sustainable development guides graduates' competencies and sustainable food systems focus on concrete practices in the Pedagogical Course Plans (CPPs).

Therefore, this article's purpose is to analyze how Nutrition programs at federal universities have been addressing the topic of sustainability from the coordinators' perspective attending to the structure of the CPPs. To this end, we investigated the mandatory and elective curricular components that address the topic, their approaches and connections; the profile of graduates; the epistemological and methodological frameworks adopted; and the role of research, outreach and teacher training in this process. Based on this analysis, this study aims to contribute for a better discussion of the Pedagogical Projects on the subject, their methodological frameworks and teaching practices, in order to support a more qualified approach in the education of nutritionists.

METHODOLOGY

This study is characterized by a mixed quantitative and qualitative approach, focusing on the analysis of Federal Higher Education Institutions (FHEIs) in Brazil that are duly registered and active with the Ministry of Education and that offer an undergraduate program in Nutrition. The survey was conducted from October 2023 to December 2025, and included the collection, organization and analysis of data relevant to the subject of study.

Initially, a national survey of FHEIs based on the website of ANDIFES (National Association of Directors of Federal Higher Education Institutions) has led to identifying that 42 of the 69 federal institutions offered an undergraduate program in Nutrition, distributed across the country's five regions: 5 in the Central-West, 11 in the Northeast, 4 in the North, 14 in the Southeast, and 8 in the South, as shown in Table 1.

The quantitative methodology was used for the verification of the CPPs. The CPPs were searched for and collected directly from the universities' official websites, and when they were not available, the coordinators were contacted by email.

Each one of the CPPs was analyzed with regard to the university, city/state, region, and year of the last update, information that is generally found on the first pages of the documents. For data collection, keywords from the PPC were sought, which ultimately resulted in an instrument aimed at facilitating the synthesis and collection of information for the established topic. After an analysis, it was deemed appropriate to divide it into four main topics, namely: curricular components; faculty profile; graduate profile/skills/competencies; and main approaches/guiding principles. It should be noted that the collection of the item “main approaches/guiding principles” differed among the CPPs because the terminology used was different among them.

For effective research, some criteria were defined to facilitate data collection across the topics. For curricular components, we searched for the following codes/words: sustain; environment; food system; food security; food sovereignty; food insecurity; and development; in addition to the distinction between mandatory and elective courses. As for the faculty profile, the graduate profile/skills/competencies and the main approaches/guiding principles, we first checked whether they were included in the Course Pedagogical Plan (CPP) and what the training programs were, and whether they were related to the term sustainable development, using the same codes/words mentioned above for the search.

The qualitative analysis of the study was used for the part of the interviews that sought to explore points not described in the CPPs. This included desirable competencies, institutional engagement with the topic, and the perspectives and concerns of the coordinators regarding education focused on sustainability. The analysis of the 42 CPPs resulted in the selection of five universities (one per region). The choice was intentional, seeking to analyze in greater depth experiences with a stronger presence of the theme of sustainability in the curriculum and those in which the current coordinator agreed to participate in the study.

Semi-structured interviews were conducted with the coordinators of the selected programs. To this end, a script containing 17 questions was prepared, divided into four thematic blocks: areas

of nutrition and the importance of sustainability; teacher training; course initiatives; and others. The interviews were conducted remotely via videoconference.

The content analysis of the interviews was conducted using the methodology outlined by Bardin (1977), which involves a set of systematic and objective techniques for describing and interpreting messages. This methodology aims to identify meanings and patterns present in the data. The analysis was divided into three stages: pre-analysis, exploration of the material, and processing of the results and interpretation. Following the initial two stages, the documents were divided into two distinct categories for the purpose of enhanced presentation: The initial objective is the incorporation of sustainability into the nutrition program and skills development. The second objective is the research, extension, teacher training, and environmentalization of the curriculum.

The study was approved by the Human Research Ethics Committee of the Federal University of Fronteira Sul (UFFS), under opinion No. 73976123.0.0000.5564. All participants provided written consent for participation by signing the Informed Consent Form (ICF) and the voice usage agreement, with a guarantee of anonymity.

Table 1 – Distribution of Nutrition CPPs in Brazilian federal higher education institutions by region, city and year

Brazilian region	CITY / STATE	FHEIs	PPC YEAR
SOUTH	Chapecó/SC	Universidade Federal da Fronteira Sul (UFFS)	2023
	Porto Alegre/RS	Universidade Federal do Rio Grande do Sul (UFRGS)	2018
	Florianópolis/SC	Universidade Federal de Santa Catarina (UFSC)	2018
	Curitiba/PR	Universidade Federal do Paraná (UFPR)	2017
	Santa Maria/RS	Universidade Federal de Santa Maria (UFSM)	2023
	Pelotas/RS	Universidade Federal de Pelotas (UFPel)	2015
	Itaqui/RS	Universidade Federal do Pampa (UNIPAMPA)	2023
	Porto Alegre/RS	Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA)	2015
CENTRAL WEST	Brasília/DF	Universidade de Brasília (UNB)	2022
	Goiânia/GO	Universidade Federal de Goiás (UFG)	2013
	Cuiabá/MT	Universidade Federal de Mato Grosso (UFMT)	2010

	Campo Grande/MS	Universidade Federal de Mato Grosso do Sul (UFMS)	2021
	Dourados/MS	Universidade Federal da Grande Dourados (UFGD)	2023
SOUTHEAST	Belo Horizonte/MG	Universidade Federal de Minas Gerais (UFMG)	2019
	Macaé/RJ	Universidade Federal do Rio de Janeiro (UFRJ)	2019
	Viçosa/MG	Universidade Federal de Viçosa (UFV)	2023
	Santos/SP	Universidade Federal de São Paulo (UNIFESP)	2023
	Niterói/RJ	Universidade Federal Fluminense (UFF)	2018
	Rio de Janeiro/RJ	Universidade Federal do Estado do Rio de Janeiro (UNIRIO)	2009
	Ouro Preto/MG	Universidade Federal de Ouro Preto (UFOP)	2018
	Governador Valadares/MG	Universidade Federal de Juiz de Fora (UFJF)	2015
	Vitória/ES	Universidade Federal do Espírito Santo (UFES)	2013
	Uberaba/MG	Universidade Federal do Triângulo Mineiro (UFTM)	2023
	Lavras/MG	Universidade Federal de Lavras (UFLA)	2021
	Uberlândia/MG	Universidade Federal de Uberlândia (UFU)	2022
	Alfenas/MG	Universidade Federal de Alfenas (UNIFAL)	2023
	Diamantina/MG	Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM)	2007
NORTH	Belém/PA	Universidade federal do Pará (UFPA)	2010
	Coari/AM	Universidade Federal do Amazonas (UFAM)	2018
	Rio Branco/AC	Universidade Federal do Acre (UFAC)	2015
	Palmas/TO	Universidade Federal do Tocantins (UFT)	2019
NORTHEAST	Vitória de Santo Antão/PE	Universidade Federal de Pernambuco (UFPE)	2012
	Vitória da Conquista/BA	Universidade Federal da Bahia (UFBA)	2018
	Santa Cruz/RN	Universidade Federal do Rio Grande do Norte (UFRN)	2020
	Maceió/AL	Universidade Federal de Alagoas (UFAL)	2010
	Lagarto/SE	Universidade Federal de Sergipe (UFS)	2019
	João Pessoa/PB	Universidade Federal da Paraíba (UFPB)	2006

	Teresina/PI	Universidade Federal do Piauí (UFPI)	2011
	Cuité/PB	Universidade Federal de Campina Grande (UFCG)	2010
	Cruz das Almas/BA	Universidade Federal do Recôncavo da Bahia (UFRB)	2021
	Barreiras/BA	Universidade Federal do Oeste da Bahia (UFOB)	2014
	São Luiz/MA	Universidade Federal do Maranhão (UFMA)	2007

Source: elaborated by the authors (2024).

Note: data collection from the CPPs was carried out in 2023, and the documents available on the websites were utilized.

RESULTS AND DISCUSSION

A temporal analysis of the CPPs revealed a positive trend: documents prepared between 2006 and 2010 mentioned sustainability in only 37.5% of cases, while those formulated between 2021 and 2025 mentioned it in 92.3% of cases. This increase is indicative of the growing prominence of the socio-environmental agenda in recent decades, driven by international initiatives such as the United Nations Sustainable Development Goals. While this finding is encouraging, it is imperative to acknowledge that it does not inherently signify a tangible impact on the practical implementation of professional training. This underscores the necessity for further research that delves into the ramifications of these changes.

Despite sporadic advancements, a significant proportion of CPPs have yet to integrate sustainability principles. Similarly, Teixeira's (2021) study, which examined the CPPs of universities in the Northeast, found that few of them incorporated sustainability into their curricula. This observation highlights a conspicuous absence of environmental education in nutrition programs and underscores the pressing need to revise CPPs to ensure that the subject is addressed in a cross-cutting and transdisciplinary manner.

This absence is consistent with the Brazilian National Curriculum Guidelines (DCNs) of 2001, which did not stipulate the mandatory inclusion of the topic (Brazil, 2001). However, Resolution No. 2, of August 15, 2025, which approved the new National Curricular Guidelines (DCNs), signifies a pivotal moment in the incorporation of sustainability principles into the education of nutritionists. This resolution acknowledges the fundamental human right to sufficient and nutritious food, emphasizing the importance of healthy and sustainable food systems as a cornerstone of health and adequate nutrition. This novel guideline signifies a substantial advancement by stipulating that professionals possess not only technical aptitudes but also an ethical and environmentally responsible posture (Brazil, 2025).

International studies, such as that by Baungaard et al. (2023), indicate that even in countries like the United Kingdom, Nutrition students report a low level of preparedness to provide guidance on sustainable diets. In Brazil, Triches & Brito (2021) found that 87.5% of school food nutritionists surveyed reported not having encountered the topic of sustainability during their undergraduate studies. This finding underscores the necessity for comprehensive curricular modifications.

With regard to the incorporation of the subject of sustainability within the curricular components of nutrition courses and skills training, it was determined that 27 universities (64.3%) offer at least one course, whether mandatory or elective, that directly addresses the concepts of sustainability and food systems, either through the course title or the content covered in its syllabus. Even so, only 24 universities include at least 1 compulsory course (Table 2). It is noteworthy that both UFMS and UFFS demonstrated an exceptional degree of curricular integration, with an eight-course array dedicated to the designated topic.

Table 2 – Compulsory courses with an emphasis on Sustainable Development and Food Systems content at HEIs offering Nutrition programs

BRAZILIAN REGION	FHEIs	COMPULSORY COURSES
SOUTH	UFFS	Environment, Economy and Society; Food and Nutrition Security; Management of Food and Nutrition Units I; Management of Food and Nutrition Units II; Dietary and Culinary Techniques II; Nutrition in Public Health.
	UFRGS	Sustainability in Meal Production.
	UFSM	Food Service Management I.
	UFSC	Food System.
	UNIPAMPA	Sociology of Food; Food Quality Control; Curricular Internship in Nutrition in Mass Catering.
CENTRAL WEST	UNB	Meal Production Management II - Practical.
	UFMT	Health and Environment
	UFMS	Collective Food Service III; Food and Nutrition Education; Mandatory Internship in Nutrition in Public Health; Nutrition and Dietetics II and III; Dietetics Technique II.
	UFGD	Collective Catering I; Phytotherapy; Human Nutrition; Dietary Technique I; Food Technology.
SOUTHEAST	UFMG	Human Ecology.

	UFRJ	Collective Food Service II; Health and Nutrition Policies and Programs.
	UNIFESP	Nutrition and Food Preparation I and II; Food Systems I and II.
	UFF	Food Service Management I; Integrated Practice in Early Childhood Education I; Hygiene in Meal Production; Integrated Practice in Food Marketing Units.
	UFOP	Planning in Food Services.
	UFES	Planning and Management in Food Service Units II; Chemistry Applied to Nutrition.
	UFTM	Collective Catering I; Nutrition and Sustainability; Food and Nutritional Security.
	UFU	Extracurricular Activities: Food and Sustainability.
	UNIFAL	Menu Planning; Food and Nutrition Unit Management I; Food Legislation and Quality; Food Technology; Food and Sustainability.
NORTH	UFAC	Environment, Health and Nutrition; Nutritional and Sustainable Food Security.
NORTHEAST	UFT	Social Sciences and Health Policies; Food, Nutrients and Local-Regional Food.
	UFS	Food and Nutrition Unit Management.
	UFPI	Experimental Food Study.
	UFRB	University, Society and the Environment.
	UFOB	Nutrition in Public Health I: Environment, Health and Community.

Source: elaborated by the authors (2024).

A notable finding in the analysis of the curricular components was the pervasive emphasis on sustainability in the domains of Social Nutrition and Collective Food Service. A significant proportion of the compulsory course offerings at universities, amounting to 48.21%, were concentrated in these specific areas, suggesting a pronounced emphasis on this field of study. Examples of courses in which the theme was most evident include “Management of Food and Nutrition Units,” “Food and Nutrition Education,” and “Sociology of Food.” However, this configuration manifests in a sectoral manner, rather than being transversal and integrated throughout the program. This limitation stands in contradistinction to the perspective defended by Jerônimo (2015), who argued that sustainability should permeate all areas of nutrition, rendering it inappropriate to restrict it to certain curricular components.

A notable statement made by a coordinator during the interview, as analyzed in the CPPs, merits particular attention.

> *"Today, I see that this issue is present in all areas, perhaps a little more in the area of Food Service, even due to the issue of waste generation in food and nutrition units [...]. And with regard to the field of Social Nutrition, I also think that the connection is a little closer, especially due to environmental issues and how all of this ends up impacting our lives directly and indirectly. As for the area of Clinical Nutrition, which is what I'm involved in, I can already see that this topic is also relevant, but perhaps it's not yet something that's so clear to us [...]"* Coordinator 1 (C1).

A thorough review of the available documentation reveals that, in the clinical domain, the subject remains largely unaddressed and is not yet fully understood. The aforementioned statements suggest that educators are interested in reflecting on this relationship. However, a lack of fundamental conceptual understanding in this area hinders the development of effective research and pedagogical practices that can effectively cultivate the competencies necessary for imparting education on sustainability within the context of undergraduate programs.

Azevedo (2014) posits that nutritionists should be instrumental in the development of fairer and more sustainable food systems in all their areas of activity. Azevedo also points out an existing gap in which nutrition is strongly aligned with the biomedical model, leaving the social, cultural, environmental, and political dimensions to drift. Resolution No. 600, published by the Federal Council of Nutritionists (CFN, 2018), emphasizes the necessity of promoting sustainable development in all areas of nutrition. It is imperative that this subject be taught in a cross-disciplinary manner.

Furthermore, the interviews showed that there are curricular components that address sustainability in some way:

> *"O What is specifically mentioned in the curriculum is the course on Institutional Food Service III, the course on Food and Nutrition Education, the Mandatory Internship in Nutrition in Public Health, and the course on Dietary Techniques II. These four subjects are mandatory in the core curriculum, and they include sustainability in their syllabi."* Coordinator 2 (C2).

> *"And in our PPC, in the last revision we did, if I'm not mistaken, in 2020, we made it mandatory for each curricular component to address the topic of sustainability in some way."* Coordinator 3 (C3).

There is an evident endeavor to reconceptualize the subject in a manner that encompasses all domains of nutrition, thereby addressing the fragmented perspective of nutrition, in which the biomedical-clinical paradigm predominates in curricula, subordinating sustainability to operational, collective contexts. It is imperative to transcend the reductionist approach to sustainability in nutrition education, which perpetuates disciplinary curricula that neglect broad

planetary impacts, and to adopt an environmental and systemic perspective. Sectoralization poses a significant challenge to the advancement of integrated, critical, and interdisciplinary education by maintaining barriers between various fields of study (e.g., biological vs. social/environmental), resulting in professionals who possess a limited perspective. This hinders their ability to effectively contribute to the transition to sustainable food systems (Nichele and Klanovicz, 2024).

With regard to the graduate profile, although all CPPs contain this section, only 11 (26.19%) explicitly mention sustainable development as a desirable competency (Table 3). The Universidade Federal de São Paulo (UNIFESP) in the Southeast region has acknowledged this concern in its document, addressing sustainable development in various subjects and criteria, thereby demonstrating a commitment to training professionals capable of acting with socio-environmental responsibility.

In the study by Lopes & Maynard (2020), Nutrition undergraduates demonstrated that, despite having a good understanding of sustainability, the subject is still rarely addressed in the program. The study also indicated a need for more initiatives, lectures, and conferences that encourage students not only to work with sustainability in mind, but also to incorporate sustainable practices into their daily lives.

Table 3 – Federal higher education institutions in Brazil that emphasize sustainability/sustainable development in the profile of graduates of the Nutrition program.

BRAZILIAN REGION	FHEIs	GRADUATE PROFILE
SOUTH	UFFS	Graduates are actively involved in promoting sustainable and socially responsible economic alternatives, particularly for micro and small rural properties.
	UFRGS	The promotion of healthy and sustainable eating practices, aimed at promoting and maintaining health.
	UFCSPA	Continuing education and its commitment to people and to social and environmental sustainability.
CENTRAL WEST	UFG	Aware of its transformative role in the world, committed to environmental sustainability.
SOUTHEAST	UFV	Respecting nature and the pursuit of environmental balance and sustainable development.

	UNIFESP	Recognize adequate and healthy food as a human right, based on sustainable and nutrition-sensitive food systems; the promotion of sustainable food systems; in order to contribute to the promotion of sustainable environments, the preservation of natural resources, and the management of waste production, for the sake of improving people's quality of life and health.
	UFF	Acting to ensure ecological and social sustainability.
	UFU	Plan menus considering the concept of sustainability.
	UNIFAL	Promote health and healthy eating practices based on scientific, ethical, and environmentally sustainable evidence.
NORTH	UFAM	Using the principles of rationality, cost-effectiveness and sustainability.
NORTHEAST	UFRN	Commit to global sustainability and environmental protection by supporting and promoting local and sustainable production.

Source: elaborated by the authors (2024).

From a sustainability standpoint, the education of nutritionists must extend beyond the mere accumulation of technical information. It is expected that students will develop a set of knowledge, skills, attitudes, and competencies that will prepare them to act critically and conscientiously in the face of environmental and social challenges. The National Policy on Environmental Education (PNEA) itself already points in this direction by stating that education must be able to foster values, knowledge, and practices aimed at environmental preservation and the promotion of collective quality of life (Brazil, 1999).

In response to inquiries regarding the coordinators' perceptions of the PPC's role in equipping nutritionists with the competencies necessary to practice sustainability, the responses exhibited a range of perspectives. The presentation highlighted several points, including the curricular structure, which is organized into domains (common, related, and specific). It also addressed the presence of research and extension activities, as well as the revision of the PPC to include the curricularization of extension.

Borges et al. (2020) emphasize the three fundamental dimensions that professionals must consider when engaging with a sustainable food system (SFS). These dimensions encompass: (1) knowledge, which encompasses an understanding of subjects such as sustainable diets, biodiversity, food waste, agroecology, food in urban environments, media influence, and related areas; (2) skills, which focus on the capacity to design sustainable menus, manage public and private procurement based on sustainability criteria, engage in policy and social movements, and develop community projects related to food democracy; and (3) interdisciplinary dialogue, which involves collaboration with fields such as agricultural sciences, biology, ecology, gastronomy,

education, and public management, thereby expanding the scope and depth of the field of nutrition.

Furthermore, in order to acquire the necessary skills that the new guidelines establish, it is necessary to develop certain resources (cognitive, procedural, and attitudinal) during undergraduate studies. In terms of sustainability, the National Curriculum Guidelines (DCNs) underscore the importance of individuals engaging in educational initiatives and sustainability efforts to promote health. They also emphasize the value of recognizing that adequate and healthy food is derived from biodiversity and socially and environmentally sustainable food systems (Brazil, 2025).

In terms of sustainability, the National Curriculum Guidelines (DCNs) underscore the importance of individuals engaging in educational initiatives and sustainability efforts to promote health. These guidelines also emphasize the value of recognizing the principle that adequate and healthy food is derived from biodiversity and socially and environmentally sustainable food systems (Brazil, 2025).

With respect to the guiding principles of the CPPs, sustainability was mentioned directly or indirectly in 27 of them (64.29%), while only 20 mentioned the terms "sustainable development" or "sustainability." The Federal University of Pampa (UNIPAMPA) and the Federal University of Mato Grosso do Sul (UFMS) have been identified as leading institutions in this regard, as evidenced by their explicit guidelines in documents pertaining to pedagogical practices with a focus on sustainability. These guidelines include measures such as reducing waste and adopting sustainable technologies in food production (UFMS, 2021; UNIPAMPA, 2023).

Correspondingly, the National Curricular Guidelines (DCNs) for Environmental Education (Brazil, 2012) underscore the necessity for higher education programs to extend beyond the mere memorization of content. The objective of this initiative is to cultivate professionals who possess the capacity to engage in critical reflection, propose alternative solutions, and demonstrate a commitment to effecting positive change in their respective fields. A survey was conducted to ascertain the concerns of the coordinators with regard to the training of nutritionists. The respondents expressed concern with the following issues:

> *"Food production, carbon dioxide emissions, etc., especially the part related to gas production and how much this also relates to sustainability"* (C1).

> *"I believe there is a growing awareness about the use of natural resources such as water and energy by weighting the issues that it generates - what is generated*

> *by the chains of food production, such as, for example, waste, disposal and how to mitigate the effects of this waste"* (C2).

The coordinators' responses indicate that the topic is broad, complex, and multifaceted. Jacob & Araújo (2020) underscore the necessity for a "framework or guideline that organizes knowledge related to the field, with the aim of establishing educational guidelines" in relation to the teaching and research of sustainable food systems. Similarly, Pettinger (2018) underscores the necessity for a consensus on the definition of sustainable food and diets. The establishment of professional standards for advocating sustainable diets would further contribute to sustainable development.

A fundamental component of higher education institutions is the inextricable nature of teaching, research, and outreach. Other than that, Guerra & Figueiredo (2014) posit that environmental integration into the curriculum does not occur solely through the inclusion of subjects. Moreover, the university has not yet developed outreach and research projects, which are encouraged as a form of management and as a space for building sustainable knowledge. In order to address this issue, the university must expand these projects to all levels of the university campus (Kitzmann & Asmus, 2012).

The interviewees noted that, within the domain of research, the initiatives and subjects concerning sustainability are predominantly centered on Food Service and Social Nutrition. This observation is corroborated by the testimony of interviewee C1, who stated, "Research on this topic is present in the two areas of nutrition practice, Social Nutrition and Food Service" (C1). Similarly, C3 highlighted research that is concentrated on the field of Nutrition and Food Service.

With regard to the scope of the initiative, the coordinators reported a range of activities, including projects related to food production that focus on vegetable gardens, particularly agroecological ones, composting, and other related initiatives.

> *"But maybe we could consider that, indirectly, we do have it. There was a project with this concern related to food production, the part of... like composting, right? Yes, that part of composting. And we had another project, I don't know if it had the exact setup of a project, it was a bit more of a student initiative for the production of gardens on campus"* (C1).

> *"Today we have a laboratory within our department — I don't know if you have heard about it — which is a garden, where we mainly work on the issue of PANCs [Non-Conventional Edible Plants]"* (C3).

> *"There is an Agroecology laboratory. They work with the garden, in partnership with the Agroecology [sector] of a municipality around here [nearby] that is very strong with Agroecology, so they make this partnership"* (C5).

According to Jacob & Araújo (2020), the implementation of educational gardens as laboratory spaces can contribute significantly to the training of nutritionists with a focus on sustainability. These environments facilitate the cultivation of food through agroecological practices, thereby promoting sustainable production, enhancing local biodiversity, and creating opportunities for the development of research and extension activities related to the topic.

Another salient element in the process of integrating sustainability into the curriculum pertains to the training of educators. According to the coordinators' statements, the most significant challenge in incorporating the topic into the course is the inadequate training of faculty members in Sustainability:

> *"I think one of the first obstacles is our education, right? So all of us—I am the youngest one in my department, so I graduated 15 years ago. I didn't have training in sustainability, right, in sustainable practices, Nutrition focused on sustainability, so the first obstacle is training, definitely so."* (C4).

Only four CPPs (9.52%) provided information on teacher training in areas related to sustainability, revealing a significant gap in teacher qualifications for addressing the topic critically and in context. As Arana & Bertoli (2021) have observed, it is unreasonable to expect a critical stance from teachers who have never received such training. This underscores the necessity to allocate resources towards the development and implementation of comprehensive teacher training programs, thereby ensuring that educators are equipped to provide effective support to students in this process. This is a matter of concern, as the cultivation of sustainable skills among students is inextricably linked to the preparation of educators, as underscored by Borges et al. (2020).

In the aforementioned study by Naves & Recine (2014), a reduced participation of nutritionists in teaching activities related to sustainable development was observed. Such activities include, but are not limited to, lectures, conferences, and research. The authors attributed this low participation to the limited presence of nutrition professionals in the sample analyzed.

It is important to acknowledge that, despite advancements in the incorporation of sustainability in recent curricula, the field of nutrition continues to reflect a reductionist paradigm centered on biomedical aspects, as previously highlighted by Mennell et al. (1992). As Lang, Barling, and Caraher (2009) have noted, Life Sciences Nutrition has historically focused on the nutritional aspects of food, while neglecting to consider its environmental and social impacts. In contrast, the Eco-Nutrition approach emphasizes sustainability as a central tenet, integrating environmental and social considerations into its framework.

In this context, it is imperative to rethink nutrition curricula in light of an education that considers the environmental, social, and ethical aspects of professional practice. Sustainability should not be regarded as an elective supplement, but rather as a foundational element of education, congruent with prevailing challenges in health, food security, and environmental conservation.

FINAL CONSIDERATIONS

The incorporation of sustainability principles within the curricula of nutrition programs remains underdeveloped, particularly with respect to the cultivation of skills. The study identifies significant curricular and educational gaps in the training of nutritionists. For instance, 35.71% of the CPPs do not incorporate an approach to sustainability, the topic is fragmented and sectoral (concentrated in Social Nutrition and Collective Food Service, with little emphasis on Clinical Nutrition), and sustainable development is mentioned explicitly as a graduate competency in only 26.19% of the CPPs. Additionally, there is a paucity of information regarding teacher training. In the projects where such information was available, only a small percentage of teachers had received explicit training or training related to the field.

According to the coordinators, the concept of sustainability is not well understood, and although the topic is present in some subjects, its cross-cutting approach is still insufficient. This highlights the need for a broader curricular overhaul. As an interdisciplinary and foundational topic, sustainability necessitates modifications in the epistemological frameworks of the science of nutrition.

Research and extension projects focused on sustainability appear to be relevant strategies for integrating environmental concerns into the curriculum. However, these initiatives are often limited to teachers who are more familiar with the topic, due to the lack of specific training for other teachers. Furthermore, the incorporation of environmental perspectives into the curriculum remains underdeveloped, particularly within the domain of nutrition.

This scenario underscores the necessity of incorporating sustainability into the curricula of all Brazilian universities in a consistent and comprehensive manner. Additionally, it emphasizes the importance of promoting faculty qualification. Moreover, this study underscores the necessity for pedagogical reviews that adopt critical and interdisciplinary approaches across all domains of nutrition, incorporating integrated and institutional projects (thereby fostering enhanced coordination between teaching, research, and extension). The text further underscores the necessity for additional research that would analyze the incorporation of the aforementioned topic into training programs and its connection to concrete pedagogical practices. Such practices may include teaching methodologies, assessment strategies, and the development of teaching

materials focused on sustainability. The objective of this research is to contribute to the revision of the CPPs and to teaching activities.

The recently issued National Curricular Guidelines (DCNs), as outlined in Resolution No. 2/2025, signify a pivotal opportunity to address these deficiencies. These guidelines formally acknowledge sustainability as a fundamental tenet in the education of nutritionists, aligning with the human right to adequate food and the promotion of sustainable food systems (Brazil, 2025). However, these are only guidelines, and their actual implementation depends on the changes made at each educational institution. Consequently, in view of the prevailing environmental and social challenges, there is an imperative need to undertake a comprehensive review of existing curricula. This endeavor must be accompanied by the generation of new knowledge to facilitate the development of education that is more firmly grounded in sustainability principles.

The limitations of this study include the focus solely on federal universities, the small number of interviews, the document analysis that depends on the quality of the records in the CPPs, and the use of codes and keywords to analyze these documents. Although this strategy allows for the systematic identification of sustainability in the text, it may not capture implicit mentions of the topic, where sustainability appears indirectly or integrated with other concepts, without the explicit use of pre-established terms. To enhance the transparency of the analysis, this limitation is acknowledged, suggesting that future research complement the method with broader qualitative analyses, such as reading documents in full or triangulation with additional interviews.

GENERATIVE AI USE DECLARATION

No generative artificial intelligence tools were used at any stage of the development of this work.

REFERENCES

Arana, A. R. A., & Bertoli, S. C. (2021). Educação ambiental no currículo de uma instituição de ensino superior: o processo de ambientalização curricular [Environmental education in the curriculum of a higher education institution: The process of curricular greening]. *Revista de Educação Pública*, *30*, 1–22. https://doi.org/10.29286/rep.v30ijan/dez.7191

Bardin, L. (1977). *Análise de conteúdo* [Content analysis]. Edições 70. (Original work published 1977)

Baungaard, C., Lane, K. E., & Richardson, L. (2023). Understanding nutrition students' knowledge, perceived barriers and their views on the future role of nutritionists regarding sustainable diets. *Nutrition Bulletin*, *48*(4), 572–586. https://doi.org/10.1111/nbu.12649

Borges, C. L. P., Silva, L. C. e, & Carniatto, I. (2020). Ambientalização curricular no ensino superior: uma revisão integrativa da literatura [Curriculum greening in higher education: An integrative review of the literature]. *Research, Society and Development*, *9*(11), Article e2069119734. https://doi.org/10.33448/rsd-v9i11.9734

Brasil. (1999). *Lei nº 9.795, de 27 de abril de 1999. Dispõe sobre a educação ambiental, institui a Política Nacional de Educação Ambiental e dá outras providências* [Law No. 9,795, of April 27, 1999. Provides for environmental education, establishes the National Environmental Education Policy, and provides other measures]. Diário Oficial da União. https://www.planalto.gov.br/ccivil_03/leis/l9795.htm

Brasil. (2001). *Resolução CNE/CES nº 5, de 7 de novembro de 2001: Institui Diretrizes Curriculares Nacionais do Curso de Graduação em Nutrição*. Ministério da Educação. https://www.gov.br/mec/pt-br/cne/pdf/normas-classificadas-por-assunto/diretrizes-curriculares-cursos-de-graduacao/rces005_01.pdf

Brasil. (2012). *Resolução nº 2, de 15 de junho de 2012: Estabelece as Diretrizes Curriculares Nacionais para a Educação Ambiental*. Ministério da Educação. https://www.gov.br/mec/pt-br/cne/pdf/resolucoes-do-cne/cp/2012/rcp002_12.pdf

Brasil. (2025). *Resolução CNE/CES nº 2, de 15 de agosto de 2025: Institui Diretrizes Curriculares Nacionais do Curso de Graduação em Nutrição*. Ministério da Educação. https://www.gov.br/mec/pt-br/cne/pdf/normas-classificadas-por-assunto/diretrizes-curriculares-cursos-de-graduacao/rces002_25.pdf

de Azevedo, E. (2014). Alimentação saudável: uma construção histórica [Healthy eating: A historical construction]. *Simbiótica: Revista Eletrônica*, 1(7). https://doi.org/10.47456/simbitica.v1i7.9004

Conselho Federal de Nutricionistas. (2018). *Resolução nº 600, de 25 de fevereiro de 2018: Dispõe sobre a definição das áreas de atuação do nutricionista e suas atribuições, indica parâmetros numéricos mínimos de referência, por área de atuação, para a efetividade dos serviços prestados à sociedade e dá outras providências*. https://cfn.org.br/wp-content/uploads/resolucoes/DOU_600.pdf

Fanzo, J. C., Graziose, M. M., Kraemer, K., Gillespie, S., Johnston, J. L., de Pee, S., Monterrosa, E., Badham, J., Bloem, M. W., Dangour, A. D., Deckelbaum, R., Dobermann, A., Fracassi, P., Hossain, S. M. M., Ingram, J., Jerling, J. C., Jones, C. J., Jap, S. I., Kiess, L., Marshall, Q., Martin, K., Narayan, A., Amuyunzu-Nyamongo, M., Pepping, F., & West, K. P. (2015). Educating and training a workforce for nutrition in a post-2015 world. *Advances in Nutrition, 6*(6), 639–647. https://doi.org/10.3945/an.115.010041

Food and Agriculture Organization of the United Nations. (2010). *Simpósio científico internacional: Biodiversidade e dietas sustentáveis – Unidos contra a fome*.

Freitas, J., & Garcia, J. C. (2018). Evolução conceitual do princípio da sustentabilidade. *Revista Direito Sem Fronteiras, 2*(4), 13–26. https://e-revista.unioeste.br/index.php/direitosemfronteiras/article/view/20229

Guerra, A. F. S., & Figueiredo, M. L. (2014). Ambientalização curricular na educação superior: Desafios e perspectivas. *Educar em Revista*, (3), 109–126. https://doi.org/10.1590/0104-4060.38110

Jacob, M. C. M., & Araújo, F. R. (2020). Desenvolvimento de competências para nutrição no contexto de sistemas alimentares sustentáveis. *Ciência & Saúde Coletiva, 25*(11), 4369–4378. https://doi.org/10.1590/1413-812320202511.31652018

Jacob, M. C. M., Araújo, D. F. S., & Madeira, P. M. R. (2018). *Caminhos para nutrição sustentável: Reflexões do II ciclo de debates sobre sistemas alimentares sustentáveis*. Elucidare. https://www.mds.gov.br/webarquivos/arquivo/seguranca_alimentar/compra_institucional/LIVRO%20-%20DIGITAL%20Caminhos%20para%20a%20Nutri%C3%A7%C3%A3o%20Sustent%C3%A1vel.pdf

Jerônimo, A. C. (2015). *O ensino da sustentabilidade na formação do nutricionista* [Trabalho de conclusão de curso de graduação, Universidade Federal do Rio Grande do Sul]. Lume – Repositório Digital da UFRGS. https://lume.ufrgs.br/handle/10183/127240

Kitzmann, D., & Asmus, M. L. (2012). Ambientalização sistêmica: Do currículo ao socioambiente. *Currículo sem Fronteiras, 12*(1), 269–290. https://www.curriculosemfronteiras.org/vol12iss1articles/kitzmann-asmus.htm

Lang, T., Barling, D., & Caraher, M. (2009). *Food policy: Integrating health, environment and society*. Oxford University Press.

Lopes, B. N. F., & Maynard, D. C. (2020). *Sustentabilidade: Percepção e hábitos sustentáveis de estudantes de nutrição* [Trabalho de conclusão de curso de graduação, Centro Universitário de Brasília]. Repositório Institucional do UniCEUB. https://repositorio.uniceub.br/jspui/bitstream/prefix/14773/1/Brenda%20N%C3%B3brega%20Fernanandes%20Lopes%20.pdf

Machado, A. D., Marchioni, D. M. L., & Carvalho, A. M. (2021). A insustentabilidade dos sistemas alimentares atuais deve ser integrada no entendimento da COVID-19 como uma sindemia. *Cadernos de Saúde Pública, 37*(12). https://doi.org/10.1590/0102-311X00253221

Marchioni, D. M. L., Carvalho, A. M., & Villar, B. S. (2021). Dietas sustentáveis e sistemas alimentares: Novos desafios da nutrição em saúde pública. *Revista USP, 128*, 61–76. https://doi.org/10.11606/issn.2316-9036.i128p61-76

Mennell, S., Murcott, A., & van Otterloo, A. H. (1992). *The sociology of food: Eating, diet and culture*. SAGE Publications.

Naves, C. C. D., & Recine, E. (2014). A atuação profissional do nutricionista no contexto da sustentabilidade. *Demetra, 9*(1), 121–136. https://doi.org/10.12957/demetra.2014.6246

Nichele, M., & Klanovicz, J. (2024). A interdisciplinaridade entre as ciências nutricionais e ambientais: Uma análise curricular nos cursos de graduação em nutrição do Brasil. *Revista Transmutare, 9*, 1–19. https://doi.org/10.3895/rtr.v9n0.17260

United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. https://sdgs.un.org/2030agenda

Pettinger, C. (2018). Sustainable eating: Opportunities for nutrition professionals. *Nutrition Bulletin, 43*(3), 226–237. https://doi.org/10.1111/nbu.12335

Teixeira, G. (2021). *Sustentabilidade e educação ambiental nos cursos de nutrição do Nordeste brasileiro: Análise dos projetos pedagógicos de curso* [Trabalho de conclusão de curso de graduação, Universidade Federal do Rio Grande do Norte]. Repositório Institucional da UFRN. https://repositorio.ufrn.br/server/api/core/bitstreams/fd2a4fb5-03da-457c-84bf-23a1a2912312/content

Triches, R. M., & Brito, I. C. de. (2021). Conhecimento e atuação de nutricionistas da alimentação escolar sobre dietas sustentáveis. *Demetra: Alimentação, Nutrição & Saúde*, *16*, e60571. https://doi.org/10.12957/demetra.2021.60571 Universidade Federal de Mato Grosso do Sul. (2021). *Projeto pedagógico do curso de nutrição*. https://facfan.ufms.br/files/2026/03/RESOLUCAO-COGRAD-n-1301-de-08-12-2025.pdf

Universidade Federal do Pampa. (2023). *Projeto pedagógico do curso de nutrição: Bacharelado*. https://repositorio.unipampa.edu.br/server/api/core/bitstreams/9344e06d-a866-4891-93fe-7ceadff900eb/content

Lidiane Lieseski

Nutritionist graduated from the State University of the Central-West (UNICENTRO) and holder of a Master's degree in Agroecology and Sustainable Rural Development from the Federal University of Fronteira Sul (UFFS). She currently works as a Technical Responsible Nutritionist for School Feeding in the Municipality of Mangueirinha, Paraná, Brazil.

lidianelieseski@gmail.com

Gabriele Gomes da Silva

Undergraduate Student in Nutrition at the Federal University of Fronteira Sul (UFFS), Realeza campus. Former research scholar for the institutional project titled “Perspectives of food sustainability in the training of nutritionists: challenges and emerging opportunities.”

gabrielegomesdasilva7@gmail.com

Rozane Marcia Triches

Professor in the Nutrition Program and the Graduate Program in Agroecology and Sustainable Rural Development at the Federal University of Fronteira Sul (UFFS), Realeza campus. PhD in Rural Development and Master in Epidemiology from the Federal University of Rio Grande do Sul (UFRGS)

rozane.triches@uffs.edu.br

How to cite this document – ABNT

LIESESKI, Lidiane; SILVA, Gabriele Gomes da; TRICHES, Rozane Marcia. Food sustainability in nutrition education at Brazilian federal universities. *Revista Docência do Ensino Superior*, Belo Horizonte, v. 16, e062235, p. 1-23, 2026. DOI: https://doi.org/10.35699/2237-5864.2026.62235.